IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Gary L. McAlpine

Serial No.:   New Application

Filed: March 29, 2001

For: METHOD AND APPARATUS FOR A TRAFFIC OPTIMIZING
                 MULTI-STAGE SWITCH FABRIC NETWORK

Art Unit: Unassigned

Examiner: Unassigned

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents   March 29, 2001
Washington, D.C.   20231

Sir:

Prior to initial examination on the merits, please amend the above-identified application as follows:

IN THE ABSTRACT

Please delete the Abstract of the Disclosure and enter the Abstract of the Disclosure attached hereto.

IN THE CLAIMS

Please amend claims 3, 9, 14, 18, 23, 25, 28, 31, 33, 36, 38, 41, 44 and 47-49 as follows:

3.   (Amended) The switch element of claim 2, wherein said three-dimensions comprise:

a) a first dimension relating to a number of outputs on said switch element;

b) a second dimension relating to a number of logical paths for said data; and

c) a third dimension relating to a number of outputs from a next element.

9. (Amended) The switch element of claim 8, wherein a queue status monitor transmits a feedback signal from said switch element to a plurality of upstream elements, said feedback signal comprising status information of output queues of said switch element.

14. (Amended) The switch fabric network of claim 11, said second switch element further comprising an arbiter to select data for transmission of said data to a downstream element.

18. (Amended) The method of claim 17, wherein said three-dimensions comprise:

a) a dimension relating to a number of outputs on said switch element;

b) a dimension relating to a number of logical paths for said data; and

c) a dimension relating to a number of outputs from a next element.

23.   (Amended) The method of claim 16, further comprising transmitting a feedback signal from said switch element to a plurality of upstream elements, said feedback signal comprising status information of output queues of said switch element.

25.   (Amended) The switch element of claim 24, wherein said arbiter selects said one of said output queues based on information of said switch element and information of a next element.

28.   (Amended) The switch element of claim 27, wherein said three-dimensions comprise:

a)   a first dimension relating to a number of outputs on said switch element;

b)   a second dimension relating to a number of logical paths; and

c)   a third dimension relating to a number of outputs from a next element.

31.   (Amended) The switch element of claim 24, wherein said queue status monitor transmits a feedback signal from said switch element to a plurality of upstream elements, said feedback signal comprising status information of output queues of said switch element.

33.   (Amended) The method of claim 32, wherein selecting said one of said output queues comprises selecting based on information of said switch element and information of a next element.

36.   (Amended) The method of claim 35, wherein said three-dimensions comprise:

a)   a first dimension relating to a number of outputs on said switch element;

b)   a second dimension relating to a number of logical paths for said data; and

c)   a third dimension relating to a number of outputs from a next element.

38.   (Amended) The method of claim 32, further comprising transmitting a feedback signal from said switch element to a plurality of upstream elements, said feedback signal comprising status information of output queues of said switch element.

41.   (Amended) The switch of claim 40, wherein said first arbiter schedules said next data packet based on calculated transmit priorities of target queues in a downstream element.

44.   (Amended) The switch of claim 39, wherein said pressure function relates to a relationship of data in said switch and data in a downstream element.

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47. (Amended) The method of claim 45, wherein transmit priority is further determined based on information of target queues in a downstream element.

48. (Amended) The method of claim 47, wherein said scheduling comprises selecting a target queue of said downstream element having a highest calculated transmit priority.

49. (Amended) The method of claim 45, wherein said pressure function relates to a relationship of data in said switch and data in a downstream element.

REMARKS

Claims 1-49 are pending in this application.

By this Preliminary Amendment, each of claims 3, 9, 14, 18, 23, 25, 28, 31, 33, 36, 38, 41, 44 and 47-49 are amended for clarity. The Abstract is similarly amended. No new matter is added. Attached hereto is a marked-up version of the changes made to the claims by this amendment. The attached page is captioned "Version With Markings to Show Changes Made".

CONCLUSION

A prompt examination on the merits is earnestly solicited.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or

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credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (219.39285X00).

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

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Attachment:

Substitute Abstract of The Disclosure

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IN THE CLAIMS

Claims 3, 9, 14, 18, 23, 25, 28, 31, 33, 36, 38, 41, 44 and 47-49 have been amended as follows:

3. (Amended) The switch element of claim 2, wherein said three-dimensions comprise:

a) a first dimension relating to a number of outputs on said switch element;

b) a second dimension relating to a number of logical paths for said data; and

c) a third dimension relating to a number of outputs from a next [switch] element.

9. (Amended) The switch element of claim 8, wherein a queue status monitor transmits a feedback signal from said switch element to a plurality of upstream [switch] elements, said feedback signal comprising status information of output queues of said switch element.

14. (Amended) The switch fabric network of claim 11, said second switch element further comprising an arbiter to select data for transmission of said data to a downstream [switch] element.

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18. (Amended) The method of claim 17, wherein said three-dimensions comprise:

a) a dimension relating to a number of outputs on said switch element;

b) a dimension relating to a number of logical paths for said data; and

c) a dimension relating to a number of outputs from a next [switch] element.

23. (Amended) The method of claim 16, further comprising transmitting a feedback signal from said switch element to a plurality of upstream [switch] elements, said feedback signal comprising status information of output queues of said switch element.

25. (Amended) The switch element of claim 24, wherein said arbiter selects said one of said output queues based on information of said switch element and information of a next [switch] element.

28. (Amended) The switch element of claim 27, wherein said three-dimensions comprise:

a) a first dimension relating to a number of outputs on said switch element;

b) a second dimension relating to a number of logical paths; and

c) a third dimension relating to a number of outputs from a next [switch] element.

31. (Amended) The switch element of claim 24, wherein said queue status monitor transmits a feedback signal from said switch element to a plurality of upstream [switch] elements, said feedback signal comprising status information of output queues of said switch element.

33. (Amended) The method of claim 32, wherein selecting said one of said output queues comprises selecting based on information of said switch element and information of a next [switch] element.

36. (Amended) The method of claim 35, wherein said three-dimensions comprise:

a) a first dimension relating to a number of outputs on said switch element;

b) a second dimension relating to a number of logical paths for said data; and

c) a third dimension relating to a number of outputs from a next [switch] element.

38. (Amended) The method of claim 32, further comprising transmitting a feedback signal from said switch element to a plurality of upstream [switch] elements, said feedback signal

comprising status information of output queues of said switch element.

41. (Amended) The switch of claim 40, wherein said first arbiter schedules said next data packet based on calculated transmit priorities of target queues in a downstream [switch] element.

44. (Amended) The switch of claim 39, wherein said pressure function relates to a relationship of data in said switch and data in a downstream [switch] element.

47. (Amended) The method of claim 45, wherein transmit priority is further determined based on information of target queues in a downstream [switch] element.

48. (Amended) The method of claim 47, wherein said scheduling comprises selecting a target queue of said downstream [switch] element having a highest calculated transmit priority.

49. (Amended) The method of claim 45, wherein said pressure function relates to a relationship of data in said switch and data in a downstream [switch] element.

ABSTRACT OF THE DISCLOSURE

A switch element is provided that includes a plurality of input interfaces to receive a plurality of output interfaces. A buffer may couple to the input interfaces and the output interfaces. The buffer may include a multi-dimensional array of output queues to store the data. Each subset of the multi-dimensional array of output queues may be associated with a separate one of the output interfaces. An arbiter device may select one of the output queues for transmission based on transmit pressure information.